AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1. (Withdrawn): A semiconductor device comprising:

a silicon substrate;

a gate insulation film formed over said silicon substrate; and

a gate electrode formed over said gate insulation film,

silicon atoms on a surface of said silicon substrate being displaced toward said gate insulation film side.

2. (Withdrawn): The semiconductor device according to claim 1, wherein a conductive type of said surface of said silicon substrate is P-type below said gate insulation film.

3. (Withdrawn): The semiconductor device according to claim 1, wherein a displacement amount of said silicon atoms on said surface of said silicon substrate is 0.0075 nm or more.

4. (Withdrawn): The semiconductor device according to claim 3, wherein said displacement amount is 0.01 nm to 0.03 nm.

5. (Withdrawn): A semiconductor device comprising:

a silicon substrate;

a gate insulation film formed over said silicon substrate; and

a gate electrode formed over said gate insulation film,

silicon atoms on a surface of said silicon substrate in a region where a conductive type of said surface is P-type below said gate insulation film being displaced toward said gate insulation film side, and

silicon atoms on said surface in a region where said conductive type of said surface is N-type below said gate insulation film being displaced toward an inner side of said silicon substrate.

6. (Withdrawn): The semiconductor device according to claim 5, wherein

a displacement amount of said silicon atoms in said region where the conductive type of said surface is N-type is 0.01 nm to 0.03 nm, and

a displacement amount of said silicon atoms in said region where the conductive type of said surface is P-type is 0.01 nm or less.

7. (Withdrawn): The semiconductor device according to claim 1, wherein said gate insulation film comprises:

a silicon oxide film containing nitrogen and formed over said silicon substrate; and

a silicon nitride film or high dielectric constant film formed over said silicon oxide film.

8. (Withdrawn): The semiconductor device according to claim 1, wherein said gate insulation film comprises:

a silicon oxide film containing nitrogen and formed over said silicon substrate;

a high dielectric constant film formed over said silicon oxide film; and

a silicon nitride film formed over said high dielectric constant film.

9. (Currently Amended): A manufacturing method of a semiconductor device comprising the steps of:

forming a gate insulation film over a silicon substrate; and

forming a gate electrode over said gate insulation film,

said step of forming a gate insulation film including the steps of:

forming a silicon oxide film over said silicon substrate, said silicon oxide film having a thickness of 1.5 nm or less; ~~and~~

introducing nitrogen into said silicon oxide film and displacing silicon atoms on a surface of said silicon substrate toward said gate insulation film side, and

forming a silicon nitride film or high dielectric constant film over said nitrogen-introduced silicon oxide film by a deposition method without oxidation of said nitrogen-introduced silicon film, immediately after said step of introducing nitrogen and displacing silicon atoms.

10. (Original): The method according to claim 9, wherein said step of introducing nitrogen and displacing silicon atoms comprises the step of conducting a first heat treatment to said silicon oxide film in an ammonia atmosphere or nitrogen monoxide atmosphere.

11. (Original): The method according to claim 9, wherein said gate insulation film is formed over a region where a conductive type of said surface of said silicon substrate is P-type.

12. (Previously Presented): A manufacturing method of a semiconductor device comprising the steps of:

forming a gate insulation film over a silicon substrate; and

forming a gate electrode over said gate insulation film,

said step of forming a gate insulation film including the steps of:

forming a silicon oxide film over said silicon substrate, said silicon oxide film having a thickness of 1.5 nm or less; and

introducing nitrogen into said silicon oxide film, displacing silicon atoms on a surface of said silicon substrate in a region where a conductive type of said surface is P-type below said gate insulation film toward said gate insulation film side, and displacing silicon atoms on said surface in a region where said conductive type of said surface is N-type below said gate insulation film toward an inner side of said silicon substrate.

13. (Original): The method according to claim 12, wherein said step of introducing nitrogen and displacing silicon atoms comprises the step of conducting a first heat treatment to said silicon oxide film in a ammonia atmosphere or nitrogen monoxide atmosphere in said region where the conductive type of said surface is P-type, and conducting a plasma nitridation treatment to said silicon oxide film in an ammonia atmosphere or nitrogen monoxide atmosphere in said region where the conductive type of said surface is N-type.

14. (Original): The method according to claim 10, wherein said first heat treatment is conducted at 775°C or higher.

15. (Cancelled)

16. (Currently Amended): The method according to claim [[15]] 9, wherein said step of forming a gate insulation film comprises the step of conducting a second heat treatment to said silicon oxide film, to which nitrogen has been introduced, after said step of forming a silicon nitride film or high dielectric constant film.

17. (Original): The method according to claim 16, wherein said second heat treatment is conducted at a higher temperature than that at which said silicon nitride film or high dielectric constant film is formed.

18. (Cancelled)

19. (Original): The method according to claim 16, wherein said second heat treatment is conducted in a nitrogen monoxide atmosphere.

20. (Cancelled)

21. (New): A manufacturing method of a semiconductor device comprising the steps of:

forming a gate insulation film over a silicon substrate; and

forming a gate electrode over said gate insulation film, said step of forming a gate insulation film including the steps of:

forming a silicon oxide film over said silicon substrate, said silicon oxide film having a thickness of 1.5 nm or less; and

introducing nitrogen into said silicon oxide film and displacing silicon atoms on a surface of said silicon substrate toward said gate insulation film side,

forming a high dielectric constant film over said nitrogen-introduced silicon oxide film by a deposition method without oxidation of said nitrogen-introduced silicon oxide film, immediately after said step of introducing nitrogen and displacing silicon atoms;

conducting a second heat treatment to said silicon oxide film, to which nitrogen has been introduced; and

forming a silicon nitride film over said high dielectric constant film.

22. (New): The method according to claim 21, wherein said step of introducing nitrogen and displacing silicon atoms comprises the step of conducting a first heat treatment to said silicon oxide film in an ammonia atmosphere or nitrogen monoxide atmosphere.

23. (New): The method according to claim 21, wherein said gate insulation film is formed over a region where a conductive type of said surface of said silicon substrate is P-type.

24. (New): The method according to claim 22, wherein said first heat treatment is conducted at 775°C or higher.